THE COMPARISON OF THE BLIND, THE DEAF, THE DEAF-BLIND, AND THOSE POSSESSED OF ALL THEIR SENSE FACULTIES, IN RESPECT TO IMAGINATIVE POWER.

THE phase of imaginative manifestation with which this paper will chiefly concern itself, is that designated by Dr. Dewey as the "mechanical imagination," that which "deals with real material—things and events previously experienced—and confines its activity to forming abstractions and producing combinations not experienced." It is not simply the *image*-ination involved in perception and memory, but it is most solidly based upon this. Indeed, at first the images are brought into consciousness as memories of what has been experienced through the action of the senses. Repeated reproductions of this kind, with little emphasis upon the time and place in which the original sense-experiences were gained, tend to free these memory images from their connection with real material—to give them a purely ideal existence, and thus prepare them for new combinations. Thereupon, interest transforms these released images into novel and hitherto unexperienced products. Some of these products are images of actual material existences. Others have an ideal existence only. Such images as these, the results of this dissociative and recombining process carried on without any unusual or phenomenal emotional activity, constitute a very large part of the "mind-stuff" of the ordinary mortal. These images, to an inconceivably greater degree than the pure memory images in which they had their origin, constitute the "stock-in trade" in the fundamental part of all educative effort.

With this preliminary statement made in order that there may be no misapprehension of my meaning when I use the expression *imaginative power*, I pass to the consideration of its manifestation of the four classes named in my subject.

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Allow me to plunge at once *in medias res*, with the affirmations: (1) That the deaf are the least imaginative of these four classes. (2) That next to these are those possessed of all their sense faculties. (3) That the blind are more imaginative than normal people. (4) That the deaf-blind excel all the others in this respect.

I shall attempt to show: (1) By the testimony of competent witnesses that these affirmations are in accord with the facts. (2) That the student of psychology might have predicted this outcome of such observation and investigation. (3) That there is an important practical pedagogical lesson to be learned from these facts.

I.

First, then, are these affirmations correct?

Dr. J. C. Gordon, for twenty-four years a teacher in the only college for the deaf in the world, and now superintendent of the Illinois State School for Deaf Mutes, writes:

"You are right in assuming that the congenitally deaf are deficient in imagination, limiting this term to the power of representing realities or picturing objects mentally in their actual relations. The deaf-mute revels in the endless panorama of sense-perceptions and is but little given to reflecting or logical thinking. The common lack of imagination, 'inability to grasp abstractions, and incredulity and contempt of all truth that lies outside the limits of their own narrow experience' in the case of the deaf, have been noted in a paper, by Miss Porter, of the Kendall School, *which has met with wide approval.*"

Dr. Enoch Henry Currier, for many years superintendent of a large school for the deaf in New York City, writes:

"I consider you are right in both assumptions; first, that deaf people do not take kindly to mathematics, and second, that the deaf are unimaginative."

Professor F. W. Booth, a most successful teacher of the deaf at Mt. Airy, Philadelphia, writes:

"Your second question I will answer first, 'Am I right in the assumption that the deaf are unimaginative?' Yes, decidedly. They *do* lack in imagination; but I must say also they lack in perhaps equal measure in every other power or faculty entering into the composition of mind. (?) The trouble with the deaf is that in their earlier and most impressible years they lack language, and hence lack all the development that the mere learning of language brings. . . . The imaginative power, I should say, is a much used power in the learning of language made up as language is of arbitrary symbols. Hence the deaf *must lack this power in extreme degree.*"

Fairness compels me to say that there are teachers of the deaf who do not thus regard their pupils. But those from whom I have quoted, have had exceptional training, and exceptional opportunities for studying the deaf-mute pupil, that cannot fail to give great weight to their testimony. One of these gentlemen cites two extreme cases which illustrate and emphasize the difficulty with which the teacher of the deaf must contend.

1. A class of deaf-mutes who had been in school for several years were asked, "If one chicken has two legs, how many legs have four chickens?" Failing to get a correct result, one pupil offered as a reason for his inability to solve the problem, the fact that he could not "draw the chickens,"—draw them with his pencil! Neither could he make a *mental* picture of four pairs of chicken-legs.

2. A pupil who had much skill in copying pictures was asked to "draw a pig," when no pig or picture of a pig was present to the sense. He made the effort, but it was necessary to put a label on his production in order that those who were not present when the lesson was assigned, might be able to understand what object his picture was intended to represent.

That the congenitally blind are capable of unusual imaginative activity is easily proved by the observation of their work in any one of the schools provided for this class. Let it be remembered, however, that comparatively few blind persons are proper subjects for such investigation. A majority of the pupils in a school for the blind, either possess in some degree the power of sight, or hold in memory images of what once came to them through the sense of sight. Of those who have always lived in darkness and therefore possess no visual images, some — a sadly large number — bear seriously heavy handicaps other than that of blindness. Such investigation, therefore, must be made mainly with the few who, having been well born, lost their sight soon after birth without injury to the other faculties.

The results of systematic, educative effort with such as these, are pronounced by every observer "simply marvelous." Their keen appreciation of a pun, of poetry, of the classic in music and in literature, their success in imaging quantity as a basis for work in mathematics, all these are but evidences of their activity in imaginative exercise. They delight in reading, because this brings into consciousness a whole panorama of interesting related images, — interesting because by them they are easily produced, are clear, and are related. A blind boy eleven years old read several books of the Old Testament Scriptures *for pleasure*. A blind boy seven years old, during the first half of his second year in school, read Jane Andrews' Seven Little Sisters *and enjoyed it*. A year's practice enabled him to translate symbols appealing to finger-tips into seven delightful pictures of child-life in seven quarters of the globe. What child, pray you, blind, normal, deaf, or deaf-blind, would not delight in these pictures if only he could see them, as did little blind Arthur? (When will we learn that in any elementary school the truest measure of success is the ability of the child to bring into consciousness that for which symbols stand? When will we learn that the bane of much of our school work is the demand upon the children that they shall enjoy and see relation when the things to be enjoyed and which are related are not in consciousness?)

So pronounced is the imaginative power of the blind that I am convinced that so far as mere mental training is concerned, their compensations are nearly if not quite equal to their deprivations.

The great task of the educator of the blind does not present itself in the reading class, not in the class in history or geography or mathematics or literature or physics or chemistry. It does not come when the pupil is learning to read his music from embossed characters and to understand the composition of the different chords. It comes when he attempts to lead his pupil to use his natural and acquired mental powers in useful occupation. It comes when he attempts to prepare his pupil to contribute to community life so much of value as will pay for what he consumes—in a word, to prepare him to earn a living. (It is just possible that teachers in the common schools might profitably consider this phase of the educational problem. There are some "defectives," so far as *earning* is concerned even though they may seem quite skillful in *learning*, in the public schools.)

As to the imaginative power of the deaf-blind, I offer such testimony as I have been able to secure, not denying but that I have done as many others have done before me, in educational and religious controversies—sought the records diligently for proofs of my preconceived notion.

No one of the deaf-blind people is so well known as Helen Keller. It is not necessary for me to dwell upon what she has accomplished. All concede that her mind is well furnished and well trained. It is rather my purpose to put emphasis upon the fact that this furnishing must have been secured mainly through imaginative activity. It could have been acquired in no other way. Is there a lesson here for everyone engaged in the business of mind furnishing and mind training? Or is hers a phenomenal mentality and therefore of no value for guidance in the education of ordinary mortals? I am obliged to admit that there are those who have known Helen intimately, who incline to either view. I shall present in this paper mainly such testimony and such expressions of opinion as tend to confirm my assumption that *we have in Helen Keller a most instructive and startling example of what may be expected when a well endowed mind is put upon a very narrow sense basis and provided with the very best instruction and training.*

In a letter recently received from Professor Arthur Gilman, for several years Helen's teacher, he says:

> I cannot recall a girl of Helen's age who so fully appreciates solid reading; but I think that any girl of good mind, who was restricted as Helen is, would have developed in the same way, if not to the same extent.
>
> Helen is descended from intelligent ancestors, and her tendencies mentally were excellent.
>
> In the process of training she has had the best services of the best instructors, and even those who have incidentally influenced her have given her the best they had.
>
> Given a girl of such family and such training, and she would under normal conditions have developed finely; but when you add to all this the exemption from bad or poor influences, and the involuntary concentration of thought, it seems to me difficult to imagine the limits of attainment.
>
> Under these circumstances an active mind must, it seems to me, increase in imaginative power more than it would under ordinary conditions. Give the deaf-blind either sight or hearing, and you lessen the power of concentration. You also take away a stimulus to the imagination.
>
> This is partly theory, for my opportunities for observing the range of Helen's power of imagination were not great; but you can see that *I agree with you that her imaginative power and power of concentration are increased greatly by the narrowness of her sense-basis. . . . With you, I believe that lessons of general application can be drawn from her work.*

Dr. Thomas Arthur Humason, who closely observed Helen for two years, writes:

> To draw any general conclusions concerning the class to which she belongs by the study of her mental qualities, would, I fancy, be about like learning the mental qualities of the average man by the study of the characteristics of Shakespeare and Immanuel Kant.
>
> The only thing that I know about her mind, after two years' careful observation, is that she has the most remarkable *memory* that I have ever known. And *this memory alone* would be sufficient to account for any or all of the "remarkable" things she has yet done. I do not mean by this that I think she is deficient in imagination and judgment, for I have no evidence that she is, but that up to the present time they are unknown quantities.
>
> The entire force of her early training *has been centered upon her memory*, and with her necessary concentration upon the impressions she receives, one would naturally expect that her memory would far exceed her higher mental powers, as it undoubtedly has. She could easily go through college by means of her verbal memory alone, and I am very much afraid she will.

Miss Ethel Shackelford, a friend of Miss Sullivan, and, I take it, a casual observer of Helen, writes:

> Miss Sullivan thinks that Miss Keller has always had a splendid natural mind, but that it could hardly be called *phenomenal.* Yet at her age Miss Keller reads Greek with a fluency that would put many a college man to shame. But those who know the case best attribute this fact, not to a wonderful mind especially, but to the devoted, intelligent, and uninterrupted care and thought that Miss Sullivan has given Miss Keller for twelve years. And, in addition to this, she has had the advantage of studying with Mr. M. S. Keith, of Boston, for the past year and a half (and I may add, *during all this time she has had the negative "advantages" of blindness and deafness!*).

Miss Shackelford also says:

> In some ways Miss Keller shows unusual imagination. It was just the other day that her tutor said that he had taught for twenty odd years and had never had such good translations of Latin and Greek poetry as Miss Keller gives him.
>
> *She seems to have very definite and clear pictures of people and things.* By feeling a gown, for instance, she seems to know exactly how it looks. When she has had a few facts concerning a landscape, she seems to imagine the rest, and, to all appearances, she gets as much satisfaction out of it as those of us who have all the senses.

Mr. William Wade, of Oakmont, Pa., who has for many years taken a deep interest in the deaf-blind of this country, does not think it advisable to cite Helen Keller in this connection because of what he terms her "phenomenal mentality." But out of his wide knowledge of the deaf-blind class—and I think there is not a man living who can boast of personal intimate acquaintance with so many of this class as can Mr. Wade—he writes: "*You are quite correct as to the deaf-blind being more imaginative than normal people.*" In proof of this he cites the work of Morrison Heady, W. A. Miller, Linnie Haguewood, and others.

In a recent report of Superintendent Anagnos, of the Perkins Institution for the Blind, we find the following in regard to the education of deaf-blind Thomas Stringer:

> Tommy's brain, instead of being made a repository for dry facts, dates, definitions, and formulae, is becoming more and more a creative force, converting the sensual preceptions and the raw materials of observation into a

product which can be used at any future time in the construction of any particular piece of mental work.

Imagination, that great brightener of human life, is Tom's in lavish measure. It has grown apace during the last year, completely covering the hard granite of daily fact with its wild luxuriance. He owns an imaginary house in New Garden, Bedford, where his imaginary friends Mr. Gas and Mr. Sun live. He enjoys settling down for lengthy conversation on these topics, and talks as if they were the veriest realities. The house is built on a generous scale; it has eight floors and ninety-four rooms, with bathroom on each floor. It is built on a big hill with a high bank, and "fenced to keep from falling." The fence also serves to "keep dogs out of garden. Big garden—many flowers—pinks, roses, violets." There is also "running water—brooklet near the house; a pond, with many boats and fish in the water." The house is situated at 16 First street, "near beach; many shells, big boats; smell!" When saying this last he sniffs delightfully, thinking of the salty air at Winthrop Beach. "Elevator in my house; strong ropes to pull; for trunk. Engine in cellar. Mr. Gallagher will keep engine. Mr. Goodcoop (a name of his own invention) will help Mr. Gallagher. A big case of books in my house, Black Beauty, reading books, and *In the Child's World.* There is a big barn, with many horses in the stalls, and a big hen house, with ninety-nine roosters, ninety hens, and many chickens!"

This is sufficient to prove Tommy Stringer's imaginative power. Let it be remembered that all these images have their elements in what has come to him through the senses of touch, taste, and smell.

II.

Second—Could the truth of the affirmations made at the beginning of this paper and sustained by the testimony of many witnesses have been predicted by a student of psychology? In answer to this question let it be observed that in *breadth of sense-basis* these classes rank as follows:

Narrowest - - - - - - - -	The deaf-blind
Somewhat broader - - - - - -	The blind
Very much broader - - - - -	Normal people
Broadest - - - - - - - -	The deaf

The first three of these statements will be conceded by all. Not so, perhaps, with the fourth.

A distinguished psychologist has said that normal people derive nine tenths of their sense-perception through the sense of sight. It is, too, a well-known fact that when any one sense is destroyed, all the others, if they are not also impaired, are greatly increased in activity and effectiveness. Mr. Wade, of Oakmont, Pa., writes me of a deaf-blind person whose sense of smell is so acute that, as he expresses it, "she has a nose like a hound." There are persons in our own school who seem to enjoy the smell of fruit or candy almost as much as they enjoy the eating of them. In the *Colorado Index* I find the following:

> One genius learned that Helen (Keller) remarked on entering a library, "There are many books here," and he figured out some mysterious spookiness in this, when the explanation is that she smelled the books.

Blind people *hear* more accurately than those with sight. They are warned when approaching a wall by the echoes of the footfall. They find their way in the streets of a city or through the various rooms and halls of a large building by the sense of hearing. Every sound and every echo is made to contribute to their success in the doing of this. No, not *every* sound. Mr. George R. Parker, a blind man who is a teacher in the Illinois State School for the Blind, and who under ordinary conditions travels over Jacksonville with ease, tells me that with an umbrella over his head and the rain falling upon it he loses his way. Very noisy carts rattling over the pavements sometimes blur his *auditory vision*, if I may use such an expression. Blind people who are musical have to a much greater degree than those with sight the power of recognizing absolute pitch. Many a blind person is able instantly to name the tones produced when six to ten keys of the piano are struck in chord or discord.

The delicacy of the touch of blind people is too well known for me to dwell upon it.

Now if it be true in the case of the deaf-blind and the blind that the remaining senses are greatly stimulated and become much more effective, it is not reasonable to conclude that the same will be true with the deaf?

Let us make a tentative expression of these relation *in figures*.

Since but three senses, sight, hearing, and touch, play an *important* part in educative processes we may, without seriously affecting the accuracy of result, ignore the senses of taste and smell. Suppose the sense of sight gives to the normal child eight tenths (instead of nine tenths as stated by Lindner) of his sense-perception and that the remaining two tenths are equally divided between hearing and touch. The following figures would then give the relative amount of sense-perception gained by the normal child through the three educative senses, and their sum would stand for the entire amount:

Touch, 1 + Hearing, 1 + Sight, 8 = 10.

But take away the sight and I think it no exaggeration to conclude that the amount gained by the other two senses will be doubled, and we have as the equation for the blind child:

Touch, 2 + Hearing, 2 + Sight, 0 = 4.

But take away the hearing. While it may not be correct in this case that the amount gained by the remaining senses will be doubled as in the case of the blind child, it will certainly be increased—shall we say 50 per cent.? If this be true we have as the equation for the deaf child:

Touch, 1½ + Hearing, 0 + Sight, 12 = 13½.

This is by no means inharmonious with Dr. Gordon's statement that the "deaf mute revels in the endless panorama of sense-perception."

But take away hearing and sight both, and it is fair to assume that the activity and effectiveness of touch will be at least tripled. The equation for the deaf-blind child then becomes:

Touch, 3 + Hearing, 0 + Sight, 0 = 3.

In proof of the fact that the tactile sense in the deaf-blind people becomes remarkably acute I will say that I once spent an evening with Edith Thomas, holding her in my lap during the period, for some minutes. The next morning, on touching my coat-sleeve, she recognized me. I once put Helen Keller's hand upon my lips and said, "Do you know Mr. Wade?" and she replied without hesitation, "Yes, yes, I know Mr. Wade."

Comparing now the totals representing, *roughly and tentatively to be sure*, the amount of sense-perception obtained by each of these classes, we have ignoring the fraction, the following:

Deaf, 13; Normal, 10; Blind, 4; Deaf-blind, 3.

If these figures and the testimony of the educators from whom I have quoted signify anything, it is that *activity in imagination increases as facility in sense-perception diminishes.* Indeed the law could hardly be other than this. Facility in sense-perception offers a *constant temptation* to spend much time in merely looking at the sense panorama. Difficulty in sense-perception *forces* the child (for the mind cannot be utterly inactive in wakeful moments) into mental reproductions — into imaginative effort.

Let us examine a little further the arithmetic of this problem. If the figures given above, 13, 10, 4, 3, fairly represent the *relative amount* of sense-preception work done by the four classes under consideration, they may be supposed to represent approximately the *time* occupied in doing it, and if the normal, well-balanced ideal student at twelve years of age, spends ten minutes in sense-perception for every ten minutes spent in imaginative and elaborative effort, then the deaf pupil may be supposed to spend thirteen minutes out of every twenty in sense-perception; the blind four minutes of each twenty; and the deaf-blind but three minutes. The ratio of time employed in securing raw material, to the time employed in the elaboration of it must be as follows:

Deaf 13:7; Normal, 10:10; Blind, 4:16; Deaf-blind, 3:17.

The interpretation of these figures is that for every hour the normal child spends in sense-perception, he spends one hour in imaginative elaboration; for every hour the deaf child spends in sense-perception he spends but half an hour in elaboration; for every hour the blind child spends in sense-perception he spends four hours in elaboration; for every hour the deaf-blind child spends in sense-perception he spends almost six hours in elaboration.

While it is not claimed that these figures are accurate or even close approximations to accuracy, it is believed that they indicate the underlying causes of the astonishingly varied results obtained in the attempts to educate these four classes.

III.

The practical lesson that seems to me to come out of this, the lesson that might possibly in many cases advantageously modify the work now being done in our common schools, is that *we are in great danger of laying too much stress upon mere sense-perception.*

What has been accomplished in the education of the deaf-blind class — Laura Bridgman, Helen Keller, Edith Thomas, Elizabeth Robin, Linnie Haguewood, Tommy Stringer, W. A. Miller, and many others, is at least proof positive that the human mind is capable, through imaginative effort, of constructing for itself a very large and invaluable amount of "mind-stuff" out of a very small amount of actual sense-perception material. The wonderful and varied imagery which these minds, in silence and in darkness, have created for themselves, stands as a perpetual challenge to those teachers who are encouraging their pupils to "revel in the endless panorama of sense-perception."

It is not necessary to make our pupils blind or deaf-blind; but it may be well sometimes to require them to shut their eyes, and ears if need be, and *think*. I can conceive of no more important school exercise than that which will induce the child to bring into consciousness images of objects that are not present to the senses. This done again and again, and the dissociative process begins. Gradually each image becomes disengaged from the thing of sense that brought it into consciousness. At length it is itself a purely ideal existence. It takes its place near at hand as a part of the stock of essential "mind-stuff" to be easily called again into consciousness whenever it is needed in recombining, in conceiving constructively, in comparing, in discerning relation — in a word, *in thinking*. Dr. Dewey says "it is this double process of separating and adding that constitutes the lowest stage of imagination." Is not this, then, *the place for emphasis* in the development of imaginative power? Are there not well defined steps that should be taken by each pupil in the cultivation of this power?

I am confident that no more important subject in child-study could be suggested than that which would lead to a more careful consideration of *the imaging power of pupils in the lower grades;* lead to a less frequent demand that pupils shall think — discern relation — when they have not in consciousness the things related; lead to such training of the "mechanical imagination" as will enable each pupil to provide for himself so much of related "mind-stuff" as will make his reading a pleasure and study a delight.